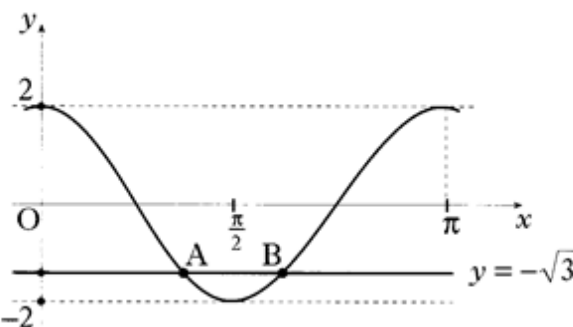
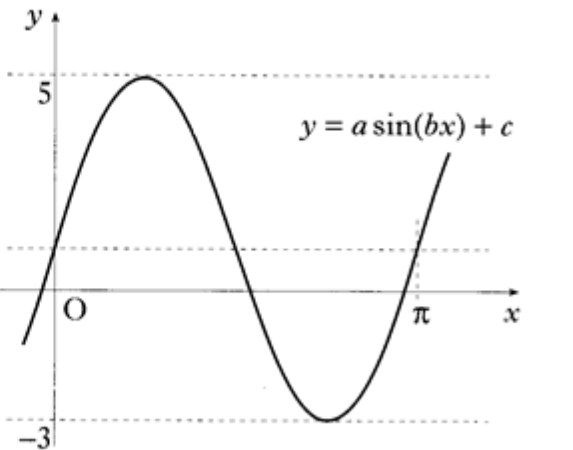
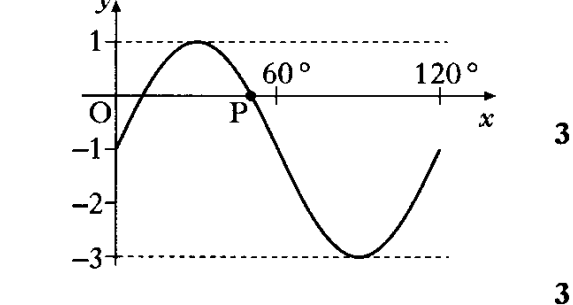
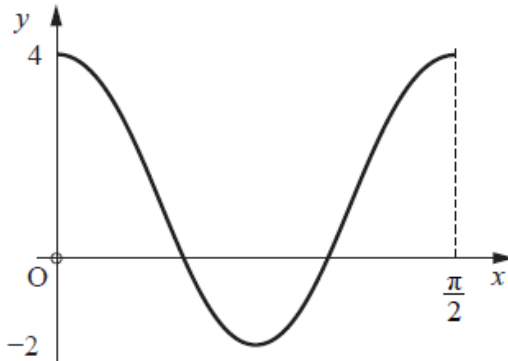
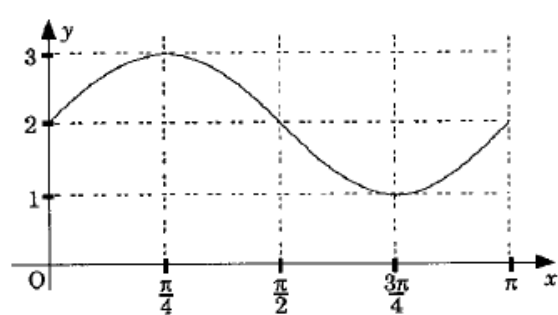


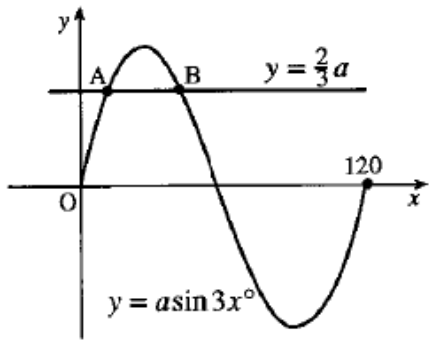
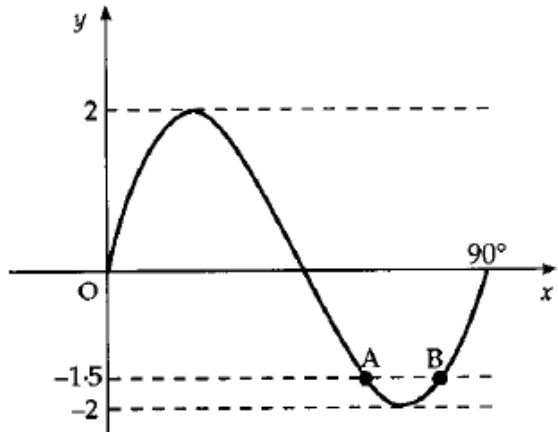
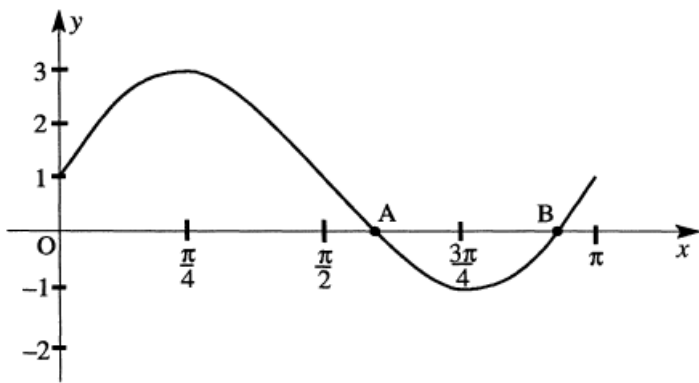
## Simple Trig Equations and Graphs

2002 P1	<p>8. The diagram shows the graph of a cosine function from 0 to <math>\pi</math>.</p> <p>(a) State the equation of the graph.</p> <p>(b) The line with equation <math>y = -\sqrt{3}</math> intersects this graph at points A and B.</p> <p>Find the coordinates of B.</p>	 <p>1</p> <p>3</p>
2003 P2	<p>2. The diagram shows a sketch of part of the graph of a trigonometric function whose equation is of the form <math>y = a \sin(bx) + c</math>.</p> <p>Determine the values of <math>a</math>, <math>b</math> and <math>c</math>.</p>	 <p>3</p>
1. (JAN) 02 P1	<p>(a) Write down the exact values of <math>\sin\left(\frac{\pi}{3}\right)</math> and <math>\cos\left(\frac{\pi}{3}\right)</math>.</p> <p>(b) If <math>\tan x = 4 \sin\left(\frac{\pi}{3}\right) \cos\left(\frac{\pi}{3}\right)</math>, find the exact values of <math>x</math> for <math>0 \leq x \leq 2\pi</math>.</p>	<p>1</p> <p>2</p>
2004 P1	<p>3. Find all the values of <math>x</math> in the interval <math>0 \leq x \leq 2\pi</math> for which <math>\tan^2(x) = 3</math>.</p>	<p>4</p>
2007 P2	<p>4. The diagram shows part of the graph of a function whose equation is of the form <math>y = a \sin(bx^\circ) + c</math>.</p> <p>(a) Write down the values of <math>a</math>, <math>b</math> and <math>c</math>.</p> <p>(b) Determine the exact value of the <math>x</math>-coordinate of P, the point where the graph intersects the <math>x</math>-axis as shown in the diagram.</p>	 <p>3</p> <p>3</p>
2015 SP P1	<p>12. The voltage, <math>V(t)</math>, produced by a generator is described by the function <math>V(t) = 120 \sin 100\pi t</math>, <math>t &gt; 0</math>, where <math>t</math> is the time in seconds.</p> <p>(a) Determine the period of <math>V(t)</math>.</p> <p>(b) Find the first three times for which <math>V(t) = -60</math>.</p>	<p>2</p> <p>6</p>

2015 EP P1	<p>4. For the function <math>f(x) = 2 - 3\sin\left(x - \frac{\pi}{3}\right)</math> in the interval <math>0 \leq x &lt; 2\pi</math>, determine which two of the following statements are true and justify your answer. <span style="float: right;">3</span></p> <p>Statement A The maximum value of <math>f(x)</math> is <math>-1</math>.</p> <p>Statement B The maximum value of <math>f(x)</math> is <math>5</math>.</p> <p>Statement C The maximum value occurs when <math>x = \frac{5\pi}{6}</math>.</p> <p>Statement D The maximum value occurs when <math>x = \frac{11\pi}{6}</math>.</p>
2015 P1	<p>4. The diagram shows part of the graph of the function <math>y = p \cos qx + r</math>.</p>  <p>Write down the values of <math>p</math>, <math>q</math> and <math>r</math>. <span style="float: right;">3</span></p>

### Pre 2000 Questions - Simple Trig Equations and Graphs

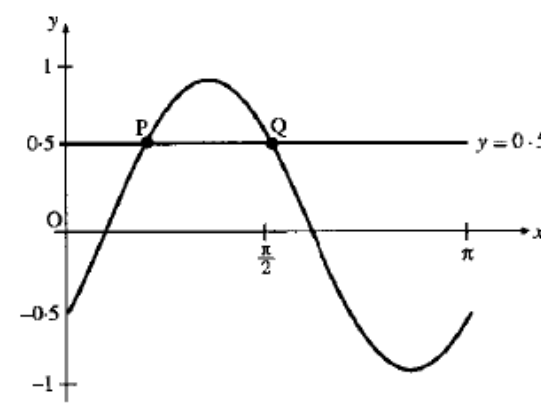
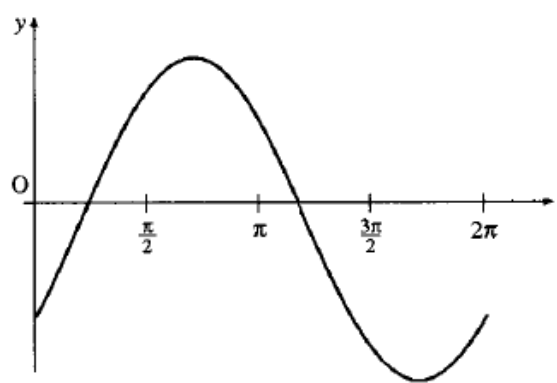
1	Find the exact solutions of the equation $4\sin^2 x = 1$ , $0 \leq x < 2\pi$ . <span style="float: right;">4</span>
2	Solve the equation $2\cos^2 x = \frac{1}{2}$ , for $0 \leq x \leq \pi$ . <span style="float: right;">3</span>
3	Solve $2\sin 3x^\circ - 1 = 0$ for $0 \leq x \leq 180$ . <span style="float: right;">4</span>
4	<p>The diagram shows the graph of the function <math>y = a + b \sin cx</math> for <math>0 \leq x \leq \pi</math>.</p> <p>(a) Write down the values of <math>a</math>, <math>b</math> and <math>c</math>.</p> <p>(b) Find algebraically the values of <math>x</math> for which <math>y = 2.5</math>.</p>  <p style="text-align: right;">3, 3</p>

5	<p>The diagram shows part of the graph of <math>y = a \sin 3x^\circ</math> and the line with equation <math>y = \frac{2}{3}a</math>. Find the <math>x</math>-coordinates of A and B.</p> 
6	<p>The diagram shows the graph of a sine function from <math>0^\circ</math> to <math>90^\circ</math>.</p> <p>(a) State the equation of the graph.</p> <p>(b) The line with equation <math>y = -1.5</math> intersects the curve at A and B. Find the coordinates of A and B.</p> 
7	<p>The diagram below shows the graph of <math>y = 2 \sin 2x + 1</math> for <math>0 \leq x \leq \pi</math>.</p>  <p>(a) Find the coordinates of A and B (as shown in the diagram) by solving an appropriate equation algebraically. (5)</p> <p>(b) The points <math>(0, 2)</math> and <math>(\pi, 0)</math> are joined by a straight line <math>l</math>. In how many points does <math>l</math> intersect the given graph? (1)</p> <p>(c) C is the point on the given graph with an <math>x</math>-coordinate of <math>\frac{\pi}{2}</math>. Explain whether C is above, below or on the line <math>l</math>. (3)</p>
8	<p>Solve the equation <math>2 \sin\left(2x - \frac{\pi}{6}\right) = 1</math>, <math>0 \leq x &lt; 2\pi</math>.</p>

4

2, 3

4

9	<p>The diagram shows a sketch of the graph of <math>y = \sin\left(2x - \frac{\pi}{6}\right)</math>, <math>0 \leq x \leq \pi</math>, and the straight line <math>y = 0.5</math>. These graphs intersect at P and Q.</p> <p>Find algebraically the coordinates of P and Q.</p> 
10	<p>Find, correct to one decimal place, the value of <math>x</math> between <math>180</math> and <math>270</math> which satisfies the equation <math>3 \cos(2x - 40)^\circ - 1 = 0</math>.</p>
11	<p>Find the values of <math>t</math>, where <math>0 &lt; t &lt; 2\pi</math>, for which <math>4 \cos\left(2t - \frac{\pi}{4}\right)</math> has its maximum value.</p>
12	<p>The diagram shows an incomplete graph of <math>y = 3 \sin\left(x - \frac{\pi}{3}\right)</math>, for <math>0 \leq x \leq 2\pi</math>. Find the coordinates of the maximum stationary point.</p> 
13	<p>The sketch represents part of the graph of a trigonometric function of the form <math>y = p \sin(x + r)^\circ + q</math>. It crosses the axes at <math>(0, s)</math> and <math>(t, 0)</math>, and has turning points at <math>(50, -2)</math> and <math>(u, 4)</math>.</p> <p>(i) Write down values for <math>p</math>, <math>q</math>, <math>r</math> and <math>u</math>. (4)</p> <p>(ii) Find the values for <math>s</math> and <math>t</math>. (4)</p> 